US Department of Energy

National Energy Technology Laboratory
Solid State Lighting Core Technologies - Area of Interest 1
Modification 2

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	DE-PS26-07NT43130-01
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Jul 23, 2007
CFDA Number:	81.087 -- Renewable Energy Research and Development
Cost Sharing or Matching Requirement:	Yes

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Additional Information on Eligibility:

All types of entities are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

Description

Area of Interest 1: Internal Quantum Efficiency (IQE) (DE-PS26-07NT43130-01) In order to meet the DOE luminous efficacy goals by 2015, more research is required in the area of internal quantum efficiency (IQE) of LED devices. The DOE goal for red, green and blue LEDs is 90% IQE by 2015. Research in IQE benefits both color mixing and phosphor converted LED white-light system approaches. Improvements in the IQE across the visible spectrum will improve the efficiency and color rendering for the color mixed approach. Whereas, enhancing the IQE in blue, violet, and near ultra-violet spectrum will improve the efficiency for the phosphor converted approach. Research is solicited for the improvement in the IQE of LEDs that emit light at wavelengths between 380 nm and 600 nm. Applications are sought that specifically address the improvement of IQE through the epitaxial process. This includes, but is not limited to, bandgap engineering of the active region, novel growth structures, quaternary materials, novel alloys, the use of nanostructures within the active region, epitaxial growth of alternative crystal orientations, and study/control of the role of indium in the active region. Successful applicants must address IQE improvements beyond the current levels in solid-state lighting, which are 20% for Green and 60% for Blue. Preference will be given to projects that demonstrate the highest potential for improvement from current levels. IQE targets for a three year project should exceed 40% for Green, and 70-80% for Blue LEDs. Demonstrable and quantifiable improvements in the IQE are suggested milestones for proposals to this approach. Interested parties looking to submit an application under this

area of interest can download the application package at the following link: http://www.grants.gov/search/search.do?oppId=13946 mode=VIEW

Click here to view the Opportunity -

https://ecenter.doe.gov/iips/faopor.nsf/UNID/15F7A4462D1577CB852573050050F96A?OpenDocument

http://www.grants.gov/search/search.do?mode=VIEW&oppId=13946

US Department of Energy
National Energy Technology Laboratory
Program Area of Interest 1 - High Efficiency LEDs Modification 2

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	DE-PS26-07NT43131-01
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Jul 18, 2007
Funding Instrument Type:	Cooperative Agreement
CFDA Number:	81.086 -- Conservation Research and Development
Cost Sharing or Matching Requirement:	Yes

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Description

Under this Program Area of Interest, the DOE is seeking applications for the development of next generation, high efficacy, LED lamps to be used for general illumination. The DOE anticipates improvement to LED efficacy through advancements in thermal design, extraction efficiency, internal quantum efficiency, current injection efficiency, and/or phosphor system efficiency on production devices.

Link to Full Announcement:

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http://www.grants.gov/search/search.do?mode=VIEW&oppId=14184

US Department of Energy
National Energy Technology Laboratory
Solid State Lighting Core Technologies - Area of Interest 1
Modification 4

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	DE-PS26-07NT43130-01
CFDA Number:	81.087 -- Renewable Energy Research and Development
Cost Sharing or Matching Requirement:	Yes

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Additional Information on Eligibility:

All types of entities are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

Description

Area of Interest 1: Internal Quantum Efficiency (IQE) (DE-PS26-07NT43130-01) In order to meet the DOE luminous efficacy goals by 2015, more research is required in the area of internal quantum efficiency (IQE) of LED devices. The DOE goal for red, green and blue LEDs is 90% IQE by 2015. Research in IQE benefits both color mixing and phosphor converted LED white-light system approaches. Improvements in the IQE across the visible spectrum will improve the efficiency and color rendering for the color mixed approach. Whereas, enhancing the IQE in blue, violet, and near ultra-violet spectrum will improve the efficiency for the phosphor converted approach. Research is solicited for the improvement in the IQE of LEDs that emit light at wavelengths between 380 nm and 600 nm. Applications are sought that specifically address the improvement of IQE through the epitaxial process. This includes, but is not limited to, bandgap engineering of the active region, novel growth structures, quaternary materials, novel alloys, the use of nanostructures within the active region, epitaxial growth of alternative crystal orientations, and study/control of the role of indium in the active region. Successful applicants must address IQE improvements beyond the current levels in solid-state lighting, which are 20% for Green and 60% for Blue. Preference will be given to projects that demonstrate the highest potential for improvement from current levels. IQE targets for a three year project should exceed 40% for Green, and 70-80% for Blue LEDs. Demonstrable and quantifiable improvements in the IQE are suggested milestones for proposals to this approach. Interested parties looking to submit an application under this area of interest can download the application package at the following link: http://www.grants.gov/search/search.do?oppId=13946 mode=VIEW

https://ecenter.doe.gov/iips/faopor.nsf/UNID/15F7A4462D1577CB852573050050F96A?OpenDocument

http://www.grants.gov/search/search.do?mode=VIEW&oppId=13946

US Department of Energy
National Energy Technology Laboratory
Program Area of Interest 2 - LED Based Integrated Luminaire Modification 2

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	DE-PS26-07NT43131-02
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Jul 18, 2007
Funding Instrument Type:	Cooperative Agreement

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Description

Under Program Area of Interest 2, the DOE is seeking applications to support the development of LED based integrated luminaires for general illumination. These luminaires must be designed to incorporate the advantages of LEDs: the small size of the individual LED allows for more flexibility of form factor and optical design, LEDs now have a higher source efficacy than most other light sources (~100lm/W), LEDs are inherently dimmable, and multiple LEDs and even multiple fixtures can be powered from a common power supply.

Link to Full Announcement

Click here to view the Opportunity

https://e-center.doe.gov/iips/faopor.nsf/UNID/FF9D05CA84D75DE78525730100550669?OpenDocument

http://www.grants.gov/search/search.do?mode=VIEW&oppId=14185

US Department of Energy
National Energy Technology Laboratory
Solid State Lighting - Core Technologies Area of Interest 2
Modification 2, Modification 4

Document Type:	Modification to Previous Grants Notice

Funding Opportunity Number:	DE-PS26-07NT43130-02
Opportunity Category:	Discretionary
Archive Date:	Sep 16, 2007
Funding Instrument Type:	Cooperative Agreement
CFDA Number:	81.087 -- Renewable Energy Research and Development
Cost Sharing or Matching Requirement:	Yes

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Additional Information on Eligibility:

All types of entities are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

Description

Area of Interest 2: Reliability and Defect Physics for Improved Emitter Lifetime and Efficiency (DE-PS26-07NT43130-02) LED crystal defects in the epitaxial material adversely affect the device lifetime and performance at high current density. Applications are sought that address defect reduction and/or mitigation in the epitaxial process. This research includes, but is not limited to, novel growth structures, improved epitaxial growth processes, studies in defect and dopant physics, and studies in the mitigation of defects at high current operation of LEDs. An additional avenue for research in this Area is low cost, high quality, substrates which should provide for a reduction in defect density in the epitaxial devices. Demonstrable and quantifiable reduction of defect density, reduction in device efficiency roll-off at high current operation, and improvement of IQE, especially at high current densities, are suggested milestones for the proposed projects to this Area. Research in this area should be working toward the 2015 goal of 150 lm/W at 150 A/cm2. Interested parties looking to submit an application under this area of interest can download the application package at the following link: http://www.grants.gov/search/search.do?oppId=13947 mode=VIEW

Link to Full Announcement

Click here to view the Opportunity –

https://e-center.doe.gov/iips/faopor.nsf/UNID/DA49DAE939F978FC8525730500511159?OpenDocument

http://www.grants.gov/search/search.do?mode=VIEW&oppId=13947

US Department of Energy
National Energy Technology Laboratory
Solid State Lighting - Core Technologies Area of Interest 3
Modification 2, Modification 4

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	DE-PS26-07NT43130-02
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Jul 23, 2007
Funding Instrument Type:	Cooperative Agreement
CFDA Number:	81.087 -- Renewable Energy Research and Development
Cost Sharing or Matching Requirement:	Yes

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Additional Information on Eligibility:

All types of entities are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

Description

Area of Interest 3: Phosphors and Conversion Materials (DE-PS26-07NT43130-03) Current high efficiency LEDs use a phosphor converted approach employing a high efficiency blue emitter with an efficient, broad emission yellow-green phosphor to create white light. Research is sought in improvements to quantum yield of blue or near UV pumped phosphors (wavelength conversion materials) emitting across the visible spectrum. Research is also sought in improvement of the optical efficiency of the phosphor system. Improvements in these areas will allow for higher efficiency and improved color rendition from phosphor converted LEDs. Phosphor stability and device color stability should also be addressed in the proposed research. Quantifiable improvements in the phosphor system efficiency should be the primary objective of this research, but spectral power distribution, CRI and color stability are also suggested milestones for this research. Research in this area should be working toward the 2015 goal of 90% QY across the visible spectrum. Interested parties looking to submit an application under this area of interest can download the application package at the following link: http://www.grants.gov/search/search.do?oppId=13948 mode=VIEW

Link to Full Announcement

Click here to view the Opportunity –

https://e-center.doe.gov/iips/faopor.nsf/UNID/6AD11AA0563538C9852573050051271B?OpenDocument

http://www.grants.gov/search/search.do?mode=VIEW&oppId=13948

US Department of Energy
National Energy Technology Laboratory
Program Area of Interest 4 - OLED Lighting Panel Design Modification 2

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	DE-PS26-07NT43131-04
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Jul 18, 2007
Funding Instrument Type:	Cooperative Agreement
CFDA Number:	81.086 -- Conservation Research and Development
Cost Sharing or Matching Requirement:	Yes

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Description

Under this Program Area of Interest, the DOE is seeking applications which support the development of fully integrated OLED luminaires. The proposed design must incorporate the advantages of using OLEDs for lighting: high efficacy, low brightness emission that reduces the need for luminaire optics, excellent color rendering, and the possibility of a variety of form factors.

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https://e-center.doe.gov/iips/faopor.nsf/UNID/70E829A5DDFE6A448525730100552842?OpenDocument

http://www.grants.gov/search/search.do?mode=VIEW&oppId=14188

US Department of Energy
National Energy Technology Laboratory

Solid State Lighting - Core Technologies Area of Interest 4
Modification 2, Modification 4

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	DE-PS26-07NT43130-04
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Jul 23, 2007
Funding Instrument Type:	Cooperative Agreement
CFDA Number:	81.087 -- Renewable Energy Research and Development
Cost Sharing or Matching Requirement:	Yes

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Additional Information on Eligibility:

All types of entities are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

Description

Area of Interest 4: Extraction Efficiency (DE-PS26-07NT43130-04) Extraction Efficiency of LEDs has been improving through the use of surface roughening, device thinning and other techniques. However the next technological leap needs to be made in order to achieve the DOE goal of 90 percent extraction efficiency before 2015. Applications are being sought to improve extraction efficiency of LEDs at the chip and packaging levels. This research includes, but is not limited to surface roughening/patterning, device thinning, chip shaping, reflective coatings, reflector designs, index matched materials, and photonic crystals. Current state of the art device extraction efficiency is around 60 percent. Applicants should propose to demonstrate extraction efficiency improvements compatible with high brightness LEDs beyond current state of the art. Improvements in extraction efficiency should be listed as milestones in the application. Interested parties looking to submit an application under this area of interest can download the application package at the following link: http://www.grants.gov/search/search.do?oppId=13949 mode=VIEW

Click here to view the Opportunity

https://ecenter.doe.gov/iips/faopor.nsf/UNID/984C03350D45E9038525730500513B03?OpenDocument

http://www.grants.gov/search/search.do?mode=VIEW&oppId=13949

US Department of Energy
National Energy Technology Laboratory
Solid State Lighting - Core Technologies Area of Interest 5
Modification 2, Modification 4

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	DE-PS26-07NT43130-05
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Jul 23, 2007
Funding Instrument Type:	Cooperative Agreement
CFDA Number:	81.087 -- Renewable Energy Research and Development
Cost Sharing or Matching Requirement:	Yes

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Additional Information on Eligibility:

All types of entities are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

Description

Organic Light Emitting Diodes (OLED) There are two OLED Areas of Interest for this Announcement. It is recognized that OLED performance is based on a complex relationship between choice of substrate, transparent conductor, light emitting materials, conductive and blocking materials, electrode materials, and encapsulants. Enhancements in one technological area should not come at the expense of overall device performance. To this point, multiple areas of interest may be addressed in a single application. The primary objective of all proposed OLED research should be improved device efficiency with secondary objectives of improved device stability, luminance, and cost. (Applicable to Areas of Interest 5 and 6) Area of Interest 5: Organic Light Emitter Research - High efficiency, low voltage, high luminance, stable materials and structures (DE-PS26-07NT43130-05) This Area of Interest is seeking research in the development of materials that will efficiently emit light, operate at a low voltage, show improvements in operating lifetime, and operate at increased brightness levels. This research includes, but is not limited to improved carrier transport materials, carrier blocking materials, integrated nano-structures, inorganic-organic hybrid materials, doping, improved anode and cathode designs, and charge balancing techniques. Improvements made in device efficacy should

not come at the expense of device stability or brightness. Applications to this area should also consider manufacturability and cost of fabrication in their application. The applications in this area should build upon prior research which will now be applied to the field of OLEDs for solid-state lighting. Applications should contain milestones with measurable improvements in device efficiency, increased luminance and improved device lifetimes. Interested parties looking to submit an application under this area of interest can download the application package at the following link: http://www.grants.gov/search/search.do?oppId=13950 mode=VIEW

Click here to view the Opportunity

https://ecenter.doe.gov/iips/faopor.nsf/UNID/FEF85A7B53401D8A8525730500514CC1?OpenDocument

http://www.grants.gov/search/search.do?mode=VIEW&oppId=13950

US Department of Energy
National Energy Technology Laboratory
Solid State Lighting - Core Technologies Area of Interest 6
Modification 2, Modification 4

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	DE-PS26-07NT43130-06
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Jul 23, 2007
Funding Instrument Type:	Cooperative Agreement
CFDA Number:	81.087 -- Renewable Energy Research and Development
Cost Sharing or Matching Requirement:	Yes

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Additional Information on Eligibility:

All types of entities are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

Description

Organic Light Emitting Diodes (OLED) There are two OLED Areas of Interest for this Announcement. It is recognized that OLED performance is based on a complex relationship between choice of substrate, transparent conductor, light emitting materials, conductive and blocking materials, electrode materials, and encapsulants. Enhancements in one technological area should not come at the expense of overall device performance. To this point, multiple areas of interest may be addressed in a single application. The primary objective of all proposed OLED research should be improved device efficiency with secondary objectives of improved device stability, luminance, and cost. (Applicable to Areas of Interest 5 and 6) Area of Interest 6: Strategies for improved light extraction of OLEDs (DE-PS26-07NT43130-06) Vast improvements have been made recently in the extraction efficiency of LEDs. However, corresponding advancements have not yet been fully applied to OLED devices. This Area of Interest is seeking research into optical device design for improved light extraction, while maintaining, or improving, device stability and device cost. OLED devices have the possibility of using unique geometries or structures, unavailable to their inorganic LED counterparts, to enhance light extraction efficiency which have not been fully explored. Advancements to extraction efficiency in existing state of the art OLED devices may provide the final necessary enhancement to allow for the competitive performance of these devices. Suggested milestones for this research are enhancements to extraction efficiency, overall device efficiency, and device stability. Interested parties looking to submit an application under this area of interest can download the application package at the following link: http://www.grants.gov/search/search.do?oppId=13951 mode=VIEW

Click here to view the Opportunity https://e-center.doe.gov/iips/faopor.nsf/UNID/B8D17003559657A38525730500515F5E?OpenDocument

http://www.grants.gov/search/search.do?mode=VIEW&oppId=13951

US Department of Energy
National Energy Technology Laboratory
Renewable and Distributed Systems Integration
Modification 8

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	DE-PS26-07NT43119-02
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Jul 25, 2007
Funding Instrument Type:	Cooperative Agreement
Award Ceiling:	$7,000,000
Award Floor:	$0
CFDA Number:	81.122 -- Electricity Delivery and Energy Reliability, Research, Development and Analysis
Cost Sharing or Matching Requirement:	Yes

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Description

NOTE: This descriptive area provides an overview of this Program Area of Interest. YOU MUST READ THE FUNDING OPPORTUNITY MASTER ANNOUNCEMENT FOR DETAILS ON ADDITIONAL INFORMATION, EVALUATION CRITERIA AND HOW TO PREPARE AN APPLICATION UNDER A SPECIFIC AREA OF INTEREST. https://e-center.doe.gov/iips/faopor.nsf/UNID/080E4B7BB5CFB052852572C900632F78? Open Document For Program Area of Interest 2, the FOA seeks applications for the research, development, and demonstration of distribution system configurations with the integration of significant amounts of distributed resources for providing power or load management during peak load periods and for other functions and services. Distributed resources may include distributed generation technologies, renewable energy generation technologies, energy storage technologies, equipment capable of utilizing waste heat, and load curtailed via typical demand response methods. Applications are encouraged to reach the goal of at least a 15 percent reduction of power that would otherwise normally be supplied by the distribution feeder circuits during peak load periods. Optionally, applications may also include research, development, and demonstration for low-cost sensors for distribution level cables, advanced monitoring for distribution automation, and consumer information gateway development. Prospective applicants are encouraged to assemble/coordinate an integrated team including an electric distribution utility or a load serving entity and other team members such as technology product providers, technology developers (universities and research organizations), state agencies, etc.

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http://www.grants.gov/search/search.do?mode=VIEW&oppId=13657

US Department of Energy
National Energy Technology Laboratory
Program Area of Interest 5 - Low cost substrates and encapsulation for OLEDs Modification 2

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	DE-PS26-07NT43131-05
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Jul 18, 2007
Funding Instrument Type:	Cooperative Agreement
CFDA Number:	81.086 -- Conservation Research and

	Development
Cost Sharing or Matching Requirement:	Yes

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Description

Program Area of Interest 5 seeks applications for the development of low cost substrates and/or encapsulation materials suitable for use with high efficacy, low cost OLEDs.

Click here to view the Opportunity

https://ecenter.doe.gov/iips/faopor.nsf/UNID/EACE2106B2F1B29E8525730100553F73?OpenDocument

http://www.grants.gov/search/search.do?mode=VIEW&oppId=14189

US Department of Energy
National Energy Technology Laboratory
Program Area of Interest 3 - Manufactured Materials - Phosphors, encapsulants, and mounting materials for LEDs Modification 2

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	DE-PS26-07NT43131-03
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Jul 18, 2007
Funding Instrument Type:	Cooperative Agreement
CFDA Number:	81.086 -- Conservation Research and Development
Cost Sharing or Matching Requirement:	Yes

Eligible Applicants

Unrestricted (i.e., open to any type of entity above), subject to any clarification in text field entitled "Additional Information on Eligibility"

Description

Under this Program Area of Interest, the DOE is seeking applications for the development of manufactured materials for use with high brightness LED lighting systems. Phosphor systems with a broad visible emission spectrum pumped by blue or

near UV LED sources with improved quantum yield and optical system efficiency are sought to improve the efficiency of high color rendering phosphor converted LED products.

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